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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,291	07/29/2003	Gopalakrishnan Janakiraman	200208213-1	5391

22879 7590 06/26/2006

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

RAHMAN, FAHMIDA

ART UNIT	PAPER NUMBER
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2116

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



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Office Action Summary

Application No.

10/628,291

Applicant(s)

JANAKIRAMAN ET AL.

Examiner

Fahmida Rahman

Art Unit

2116

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 18-23, 25 and 27-39 is/are rejected.
- 7) ☒ Claim(s) 16, 17, 24, 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This final action is in response to communications filed on 4/12/2006.
2. Claims 1-39 are pending.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1, 7, 18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1-45 of U.S. Patent No. 6813897. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the pending application and the patent disclose the same method of

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supplying power to at least one electrical device. All the limitations of claim 1 exist in the claim 1-45 of the issued patent.

The first limitation of claim 1 is "determining a power demand of the at least one electrical device" is present in claim 8 of the issued patent, the second limitation "determining an efficient operating point for a primary power supply supplying power to device" is present in claim 12 of the issued patent, the third limitation "supplying power to meet the power demand of the at least one electrical device" is present in claims 1 and claim 2. For the limitation "based on whether the primary power supply operating at efficient operating point" of claim 1 of pending application, claims 2 and 4 of issued patent mention that secondary power supply provides supply when the demand exceeds threshold and the amount of supply by secondary supply is approximately equal to the amount by which demand exceeds the threshold. Claim 12 mention that the threshold is associated with efficiency of primary power supply.

Claims 19, 29 and 33 are rejected for the same reasons mentioned above for claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-9, 11-14, 18-19, 21-23, 27-36, 38-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Budelman (US Patent 5629608).

For claim 1, Budelman teaches the following limitations:

A method of supplying power to at least one electrical device (Fig 3; abstract), the method comprising:

- **determining a power demand of the at least one electrical device** (801; lines 51-52 of column 4 mention that the secondary regulator continues to source current to load until primary regulator is able to meet the current demand of the load. Thus, the current demand of load is determined to decide if primary supply is sufficient for load);
- **determining (802) an efficient operating point** (Fig 5 shows the efficient operating point) **for a primary power supply (420) supplying power to the at least one electrical device** (lines 52-58 of column 4 mention that the output of primary voltage regulator is maintained within the desired regulated output voltage range. Thus, the desired range or the efficient operating point for a

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primary power supply supplying power to the at least one electrical device is determined);

- **and supplying power to meet the power demand of the at least one electrical device using one or more of the primary power supply** (lines 49-52 of column 4) **operating at the efficient operating point** (step 805, 810, 808, 812 mention that the output of primary supply is maintained within the allowable range and sent to the load) **and a secondary power supply based on whether the primary power supply operating at the efficient operating point is operable to meet the power demand of the at least one electrical device** (808 ensures that the secondary supply is activated and continue to keep it activated based on whether primary is able to respond adequately to the current demand of load while staying within the allowable range).

For claim 2, step 806 shows **the determining whether the power demand of the at least one electrical device exceeds an output power of the primary power supply operating at the efficient operating point** (the power demand of device exceeds output of primary supply operating within allowable range when output of primary regulator is above allowable range as shown in 806. Thus, there exists a determination whether the power demand of the at least one electrical device exceeds an output power of the primary power supply operating at the efficient operating point) and step 808 shows the **supplying of power to the load using the primary and secondary power supply in response to determining the power demand of load exceeds the**

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output power of the primary power supply operating at the efficient operating point (808 shows that the secondary is activated and maintained until primary is able to meet load demand while staying within allowable range).

For claim 3, line 40 of column 2 mention that secondary operates to source additional current. Thus, second supply supplies the amount equal to power demand of load that exceeds the primary supply.

For claim 4, Fig 5 shows the range.

For claim 5, Fig 5 shows if the voltage 530 is within lower or upper threshold. Steps 805-813 ensure if the regulator output needs to be varied to meet the demand.

For claim 6, the output of primary supply must be measured to check step 804. Line 32 of column 4 mentions that load demand at 470 is measured. That is the point where both supplies are connected. The second supply provides additional current which primary supply fails to source. Thus, output power of both primary and secondary needs to be measured to provide the adequate demand.

For claim 7, the efficient operating point of supply is based on efficiency of power supply, since this ensures the efficient operating of power supply. Lines 3-7 of column 2

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mention that regulator must be able to respond quickly. This invention ensures the efficient operation of primary supply.

For claim 8, 420 depends on 410. Thus, the consideration of efficient point of 410 must be taken into consideration for determining efficient point of 420.

For claim 9, 410 can be thought as a power distribution unit, an uninterruptible power source, and a power distribution system.

For claim 11, note lines 59-62 of column 4, which requires the determining whether power demand of load is less than output power of primary supply. In such a case, load 450 is added to increase the demand of load in response to power demand of loads being less than primary supply.

For claim 12, Fig 5 shows upper and lower threshold. That window reference is used to set desirable range for primary supply. The primary is allowed to operate within the range. Steps 805 and 806 ensure if demand is less than lower threshold.

For claim 13, load 450 is added, which can be thought as a migration to the system.

For claim 14, note step 810.

For claim 18, note Fig 3 is a computer system.

For claim 19, Budelman teaches the following limitations

A power system (Fig 3; abstract), comprising:

a first power supply (420) and a second power supply (440) operable to supply power to at least one electrical device (the devices of Fig 3);

a power delivery control device (430) connected to the first power supply and the second power supply,

wherein the power delivery control device substantially maintains the first power supply (step 805, 810, 808, 812 mention that the output of primary supply is maintained within the allowable range and sent to the load) at an efficient operating point (Fig 5 shows the efficient operating point) by controlling an output power of the first power supply and an output power of the second power supply to meet the power demand of the at least one electrical device (808 ensures that the secondary supply is activated and continue to keep it activated based on whether primary is able to respond adequately to the current demand of load while staying within the allowable range).

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For claim 21, note that the first supply is a switching supply (lines 33-34 of column 4). This is operated in a way to handle the response time for load fluctuation (lines 39-43 of column 1) by varying duty cycle (line 27 of column 1). Duty cycle is a representation of power factor.

For claim 22, note step 808.

For claim 23, 430 also acts as a workload manager, which activates or migrate load 450 when power demand is falling below the output power of supply.

For claims 27 and 28, note Fig 3.

For claim 29, Budelman teaches the following limitations

An apparatus for controlling power output from a first and second power supply (Fig 4) based on an efficiency of the first power supply (Step 808, 812 and 805 ensure operating of first supply in an allowable range. Lines 41-42 of column 4 mention that the regulated output may be out of range when primary regulator fails to respond quickly. Thus, controlling depends on how efficiently first supply can respond) wherein the first and second power supply provide power to at least one electrical device (Fig 3 shows the devices provided by the two supplies), the apparatus comprising:

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at least one power measuring circuit measuring a power demand of the at least one electrical device (lines 30-34 of column 4 mention that current load demand is used to regulate supply. Thus, measuring circuit measures the load demand);

a memory storing at least one threshold associated with an efficient operating point of the first power supply (Fig 5 shows the upper and lower boundary values. These must be stored in a memory since they are preset values. Fig 5 can be taken as an efficient operating point of primary supply, since this range ensures the ability of primary supply to respond quickly and efficiently to changing requirements as mentioned in lines 18-20 of column 2);

and a circuit controlling an output power of the first power supply to substantially maintain the first power supply at the efficient operating point based on a comparison of the power demand of the at least one electrical device to the at least one threshold (808 ensures that the secondary supply is activated and continue to keep it activated based on whether primary is able to respond adequately to the current demand of load while staying within the allowable range. Thus, the control circuit control output power of first supply so that the output is within range).

For claim 30, secondary is activated when load demand exceeds threshold and primary fails to maintain its output within range.

For claim 31, 430 adds or increases load 450 when needed.

For claim 32, line 32 of column 4 mentions that load demand at 470 is measured. That is the point where both supplies are connected. The second supply provides additional current which primary supply fails to source. Thus, output power of both primary and secondary needs to be measured to provide the adequate demand.

For claim 33, Budelman teaches the following limitations

A system comprising:

means for determining a power demand of at least one electrical device

means (801; lines 51-52 of column 4 mention that the secondary regulator continues to source current to load until primary regulator is able to meet the current demand of the load. Thus, the current demand of load is determined to decide if primary supply is sufficient for load);

a primary power supply means (420) and a secondary power supply means (440) for supplying power to meet the power demand of the at least one electrical device means (devices of Fig 3);

- **and means for controlling (430) an output power of the primary power supply means** (step 805, 810, 808, 812 mention that the output of primary supply is maintained within the allowable range and sent to the load) **and the secondary power supply means based on whether the primary power**

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supply means is operating at an efficient operating point (808 ensures that the secondary supply is activated and continue to keep it activated based on whether primary is able to respond adequately to the current demand of load while staying within the allowable range).

For claim 34, note Fig 5.

For claim 35, 430 is a workload manager that activates load 450 to keep 420 within efficient point.

For claim 36, note that the first supply is a switching supply (lines 33-34 of column 4). This is operated in a way to handle the response time for load fluctuation (lines 39-43 of column 1) by varying duty cycle (line 27 of column 1). Duty cycle is a representation of power factor.

For claim 38, step 808 shows the increase of secondary supply when primary supply exceeds the allowable range.

For claim 39, line 40 of column 2 mention that secondary operates to source additional current.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10, 20, 25, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Budelman (US Patent 5629608), in view of Bavaro et al (US Patent 4794272).

For claims 10 and 37, Budelman teaches all of the limitations of claim 1 as stated above. In addition, Budelman considers cost in designing power supply system (line 48 of column 1 mentions that prior solutions may be impractical in view of cost). However, Budelman does not consider determining operating point based on cost from two supplies.

Bavaro et al teach a system where an operating point of a power supply is determined based on cost of electricity from two sources (340 is the regulator which adjusts the operating point as shown in Fig 3 based on electricity from two sources 330 and 310. Thus, cost of electricity from two sources is being considered in determining operating point).

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For claim 20, Lines 20-25 of column 2 of Bavaro et al mention that the operating point is chosen where the output power is maximum.

For claim 25, the system of Budelman has two supplies with one source. The supply unit is connected to one source instead of two sources.

The system of Bavaro et al teaches two sources (310, 330) for one unit (340). The unit chooses solar supply over battery supply (lines 49-55 of column 1). It is widely well known that solar supply is cheaper than battery supply.

It would have been obvious to one ordinary skill in the art at the time the invention was made to take electricity from two alternate source considering the cost as taught by Bavaro et al, since that ensures the reliability and cost-effectiveness of a system.

However, the combined system does not teach that the second supply is connect to second different source.

It would have been obvious to one ordinary skill in the art at the time the invention was made to modify the combined system to have the second supply to connect with second different source, since that would relieve some load over first source, which increases the reliability of the system.

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For claim 37, the system of Budelman has two supplies with one source. The supply unit is connected to one source instead of two sources.

The system of Bavaro et al teaches two sources (310, 330) for one unit (340). The unit chooses solar supply over battery supply (lines 49-55 of column 1). It is widely well known that solar supply is cheaper than battery supply.

It would have been obvious to one ordinary skill in the art at the time the invention was made to take electricity from two alternate source considering the cost as taught by Bavaro et al, since that ensures the reliability and cost-effectiveness of a system.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Budelman (US Patent 5629608), in view of Lehr et al (US Patent 6473608).

Budelman does not teach determining whether the power demand of the at least one electrical device exceeds a limit of combined output power for the primary power supply and the secondary power supply.

Lehr et al teach determining whether the power demand of the at least one electrical device exceeds a limit of combined output power for the primary power supply and the secondary power supply (Step B and D of Fig 19A show the determination whether power demand of load is 95% or greater of available power) and reducing the power demand of the at least one electrical device in response to determining the power

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demand of the at least one electrical device exceeds the limit of combined power (step D of Fig 19A).

Lehr et al teach the use of checking the sustained condition for a predetermined time in lines 63-65 in column 37.

It would have been obvious to one ordinary skill in the art to modify the teachings of Lehr et al and add another branch in Fig 19A to test if ratio of Step B is > 1.0 . One ordinary skill in the art would have been motivated to check the comparison, since that would give the designer an idea if it is the time to take an emergency action such as emergency shut down of the system to prevent failure of power supply and other components.

Allowable Subject Matter

Claims 16, 17, 24 and 26 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed on 4/12/2006 have been fully considered but they are not persuasive.

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Regarding double patenting, applicant argues that '897 patent does not teach the operating of the primary power supply at its efficient operating point.

Examiner disagrees. Claim 1 of '897 recites supplying power to a load using a primary power system based on operating level threshold, which is associated with efficiency in the primary power system (claim 12 of '897), whereas efficiency in turn based on power factor (or, operating point) as recited in claim 14 of '897. Therefore, primary power supply provides power to load at its efficiency point that is based on operating point. For claim 7, note claim 14 of issued patent. For claim 18 of the pending application, note claim 1 of issued patent.

Regarding the rejections of claims 1, 19, 29, 33 under 35USC 102, applicant argues that "the two voltage regulators cannot be deemed power supplies, because they regulate voltage supplied by single power supply without providing any additional power. As conventionally understood in the art, a power supply provides a finite and set amount of power." Applicant further argues that "when there are two power supplies, as are claimed, a second power supply is inherently capable of providing power in addition to the finite power provided by the first supply" and "second voltage regulator provides another gateway for power to reach the load. No additional power is provided by the second voltage regulator because the total finite amount of power output to the load is governed by the finite amount of power output from the single power supply".

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Examiner disagrees. The applicant admits that the second regulator is a gateway for power for increased demand. However, applicant argues that the second regulator does not provide power additional to the supply 410 as it is dependent on 410 for its supply. There is no requirement in the claim that the two power supplies need to be from two different energy sources. Claim requires supplying power to meet the power demand using two supplies based on the condition whether primary supply is able to meet the power demand of the load while the first supply is operating at efficient point. When one source feeds two supplies or regulators, the ultimate power to load from two regulators (or supplies) is always controlled by the independent source supply. That does not mean the dependent regulators or supplies cannot be treated as two power supplies. One example is shown in line 16 of page 10 of applicant's disclosure where 132 and 136 are labeled as power supplies even though they are governed by one power supply unit 122. 132 and 136 are power supplies even though they do not provide any power additional to the signal supply 122. This is very close to Budelman's situation. In Budelman, the changing load requirement is handled by second regulator temporarily until the first supply is able to handle that.

The two voltage regulators are considered as two power supplies in the office action, since they are supplying power to load. Unless explicitly defined in applicant's specification or claim, a power supply is a unit that supplies power to other unit. Budelman used the phrase "a voltage regulator can be used to power the processor." in lines 58-59 of column 3. Budelman used "power supplies" and "regulators"

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interchangeably in lines 19-50 of column 1. The activation of second regulator is for providing power to the load in case of changing requirements. The second regulator supplies current to load, or, it is providing power to load to meet the varying power demands of load. It is not relevant whether the two regulators are supplied with single energy source or different energy source, as it is not claimed.

In addition, applicant's disclosure provides the definition of power supply as follows: "a conventional power supply is modeled as a black box with power entering the box and conditioned power exiting the black box. Conditioning may include DC/DC conversion."

That explanation perfectly fits with the description of voltage regulator, since it takes DC as input and produces DC as output with some power loss. Note lines 34-37 of column 3 of Budelman, which mention that output voltage is always lower than input voltage and some power is dissipated in 110. Thus, regulators take input power and output power with some internal power loss. Therefore, the regulators can be treated as power supply according to the definitions provided in applicant's disclosure.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fahmida Rahman whose telephone number is 571-272-8159. The examiner can normally be reached on Monday through Friday 8:30 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on 571-272-3670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fahmida Rahman
Examiner
Art Unit 2116



LYNNE H. BROWNE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100